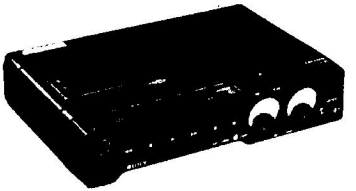
SONY

STEREO CASSETTE-CORDER

TC-D5



OPERATING INSTRUCTIONS page 4

- Before operating the unit, please read this manual thoroughly.
- This manual should be retained for future reference.

MODE D'EMPLOI page 22

- Avant toute opération, lisez attentivement ce mode d'emploi.
- Conservez ce manuel pour toute référence ultérieure.

BEDIENUNGSANLEITUNG Seite 40

- Vor Inbetriebnahme lesen Sie bitte diese Bedienungsanleitung sorgfältig durch.
- Bewahren Sie diese Anleitung zum späteren Nachschlagen gut auf.

MANUAL DE INSTRUCCIONES página 58

- Antes de manipular el aparato, lea usted este manual detenidamente.
- Conserve este manual para futuras referencias.

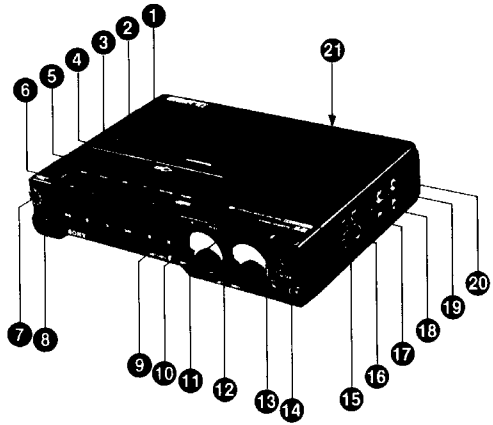


TABLE OF CONTENTS

FEATURES

- High quality stereo cassette-corder with complete portability.
- Low wow and flutter due to the capstan servo-control system.
- Dolby* Noise Reduction System which reduces tape hiss noise.
- High performance F & F (Ferrite and Ferrite) head having longer head life and stable characteristics.
- Peak Level Indicator for easier level adjustment of the occassional high level signal passage.
- Mic Attenuator for recording a large input signal without overloading the recorder amplifier.
- Tape Selector for optimum recording results with any of standard, high-performance chromium dioxide, and Sony Ferri-Chrome cassettes.
- Automatic Shut-off Mechanism activates at end-of-tape in either the record or playback mode.
- Three different power sources: batteries, house current, and 12 V car battery.

* "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Inc. Noise reduction system manufactured under license from Dolby Laboratories Inc.

PRECAUTIONS

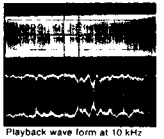
- Do not open the cabinet. Refer servicing to qualified personnel only.
- Operate the unit on two batteries (3 V dc), or on 6 V dc for an external power supply.
For ac operation, use the ac power adaptor recommended for this unit. Do not use any other ac power adaptor.
For car battery operation, use the car battery cord recommended for this unit. Do not use any other car battery cord.
- The nameplate indicating operating voltage, etc. is located on the bottom exterior.
- Disconnect the ac power adaptor from the wall outlet when the unit is not to be used for an extended period of time.
- When the unit is not to be used for a long period of time or is to be operated extensively on other power sources, remove the batteries to avoid unit damage from battery leakage.
- Do not install the unit in a location near heat sources such as radiators or airducts, or in a place subject to direct sunlight, excessive dust, moisture, rain, or mechanical shock.
- Never operate the unit right after having transported it from a cold location directly to a warm location. Wait for about an hour to allow any moisture condensation on the tape passages inside the unit to evaporate.

● Should any liquid or solid object fall into the unit, remove the batteries and disconnect the ac power adaptor, and have the unit checked by qualified personnel before operating it any further.

● Keeping the tape heads in a clean condition is essential to the proper operation of the recorder. For cleaning information, refer to page 16.

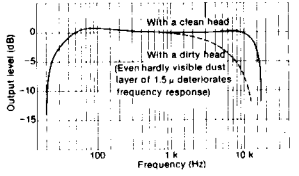
With a clean head

With a dirty head
(The output level fluctuates.)



Playback wave form at 10 kHz

Frequency response



● The Record Button cannot be depressed in the following cases. Never depress the button forcibly.
- No cassette in the Cassette Compartment.
- The cassette inserted has had the tabs removed.
- The Forward, Fast Forward or Rewind Button has been depressed.

● If you have any question or problem concerning your set that is not covered in this manual, please consult the nearest Sony Service Station authorized to service tape recorders (in the USA), the nearest Sony of Canada Factory Service Station (in Canada) or the nearest Sony dealer (in other countries).

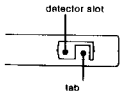
LOCATION AND FUNCTION OF CONTROLS Refer to photo on page 3.

❶ Cassette Compartment

❷ Tape Selector Switch and Chromium Dioxide Cassette Indicator [TAPE SELECT]

Select the position of the switch according to the tape to be used, referring to the table on page 13.

● When a chromium dioxide cassette having detector slots is inserted, the optimum bias current and correct equalization characteristics are selected automatically, and an orange mark appears in the window of the Chromium Dioxide Cassette Indicator just above the TAPE SELECT switch. In this case, there is no need to select the position of the TAPE SELECT switch.



❸ Dolby Noise Reduction Switch [DOLBY NR]

ON: for recording and playback with Dolby NR process.

OFF: for non-Dolby NR processed recording and playback.

Through the Dolby NR (Noise Reduction) record/playback process, tape hiss (background noise inherent in any tape) is reduced and signal-to-noise ratio is improved.

During recording, low-level high-frequency signals which would be either partially or totally concealed by tape noise, are boosted. This allows the recorded material to be better heard above the tape hiss level.

During playback, the same boosted signals are automatically reduced, returning the recorded sound to the same relative levels at the original input. Simultaneously, the noise level which was mixed with the recorded material is also reduced in volume, eliminating much of the background noise from these low-level high-frequency passages.

❹ EJECT Button

Depress to pop up the cassette.

● Do not depress the EJECT button while the tape is in motion.

❺ Tape Counter and Reset Button

Use the counter for indexing the tape contents. Before recording, set the counter to 000 by pushing the Reset Button. The figures of the counter change as the tape runs. Make a note of the figures and the program being recorded. Later, the desired program can be rapidly located by using the FF or REW button.

❻ Function Buttons

Rewind Button [REW]: Depress to rewind the tape.

STOP Button: Depress to stop the tape and to release the locked buttons. The PAUSE button cannot be released with this button.

Forward Button [FWD]: Depress for playback. For recording, depress this button while holding the RECORD button depressed.

Fast Forward Button [FF]: Depress to advance the tape rapidly.

RECORD Button: To adjust the recording level, depress this button. To start the recording, depress the FWD button while holding the RECORD button depressed.

PAUSE Button: Depress to stop momentarily the tape during recording or playback. To restart, depress it again. This button can also be used for standby recording. Depress the PAUSE button first and then depress the RECORD and FWD buttons together. When the desired program starts, push the PAUSE button to release it, and the recording will start immediately.

● To stop the tape for an extended time, use the STOP button.

These Function Buttons can be identified not only by the designations on the top panel but also by the symbols on the front panel.

top panel designation	REW	STOP	FWD	FF	RECORD	PAUSE
symbol on the front	◀◀	■	▶	▶▶	●	❚❚

❼ MONITOR LEVEL Control

This control adjusts the volume in the headphones (both in record and playback mode) and the volume of the built-in speaker (in playback mode only). Adjustment of this control in record mode does not affect the recording.

❽ HEADPHONES Jack

To monitor the input signals to be recorded (source monitor) or to listen to the playback sound, connect a set of 8–32 ohm stereo headphones to this jack.

❾ Recording Indicator [REC]

This indicator lights up when the RECORD button is depressed.

If the batteries become weak during battery operation, the lamp will glow faintly and it can be used as a simple battery check. However, to check battery condition precisely, use the BATT CHECK/LIGHT button (see page 9).

❿ Battery Check/Meter Light Button [BATT CHECK/LIGHT]

When this button is pressed while the recorder is in operation, the VU meters are illuminated for about 10 seconds, and then the light goes out automatically. During battery operation, when this button is pressed, the left VU meter shows the battery condition (see page 9).

⓫ PEAK Level Indicator

In record mode, the indicator flashes in red corresponding to the extremely short high level pulses which the VU meters cannot follow. See "Record level adjustment", page 13.

⓬ VU Meters

The meters show the input level in record mode and the recorded level in playback mode. The left meter is for the left channel and the right one for the right channel.

The left meter also functions as a battery check meter.

⓭ Recording Level Controls [REC LEVEL]

These controls adjust the recording level. The concentric knobs can regulate the right- and left-channel level simultaneously or independently. The inner knob is for the right channel and the outer for the left channel.

⓮ LIMITER Switch

This switch automatically attenuates the high intensity peaks, encountered in recording, to hold the recording level below distortion point. With this switch at the ON position after setting the recording level, the limiter circuitry operates only when a sudden high input signal is introduced, thus preventing tape saturation. Use this switch when recording programs containing high level bursts which might cause distortion.

⓯ Metal Fitting (for shoulder strap)

⓰ MICROPHONE Input Jacks

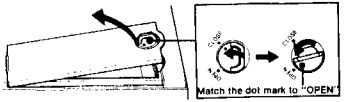
Any low-impedance microphone equipped with a phone plug may be used. If your microphone is equipped with a miniplug, a plug adaptor for converting to phone plug is required.

⑭ Microphone Attenuator Switch (MIC ATT)
This switch is useful for recording a high input signal on location (rock music, etc.), or recording with the microphone close to the source, without overloading the recorder amplifier. Set this switch to the "20 dB" position when the pointers of the VU meters swing repeatedly over 0 VU with the REC LEVEL controls set around the indication "3" or lower. The input signals will be attenuated by 20 dB.
● Normally this switch should be set to 0 dB.
⑮ Line Input Jacks (LINE IN)
Phono type jacks are provided to accept the signals from other equipment through a connecting cord. When the MICROPHONE jacks are connected, the LINE IN jacks are automatically disconnected.
⑯ Line Output Jacks (LINE OUT)
Phono type jacks are provided to supply signals to other equipment through a connecting cord.
⑰ External Power Input Jack (DC IN 6 V)
This is for operation from house current or from a 12 V car battery. See page 9.
⑱ Battery Compartment (bottom)

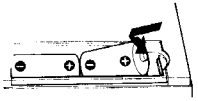
POWER SOURCES

BATTERIES

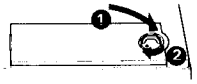
Battery installation
● Open the Battery Compartment Lid located underneath the unit as illustrated.



● Insert two batteries IEC designation R20 (size D) with correct polarity as illustrated.
● The flat side of the battery presses against the spring.



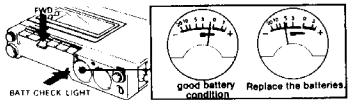
● Close the lid.



● The unit cannot be operated on the internal batteries when either the ac power adaptor or car battery cord is connected to the unit.
● When the unit is not to be used for a long period of time or is to be operated extensively on other power sources, remove the batteries to avoid unit damage caused by battery leakage and corrosion.
● The use of high quality batteries such as alkaline batteries is recommended for long life.

Battery life
Approximately 2 hours of continuous recording is possible using Sony Super Batteries SUM-1S or 5.5 hours of continuous recording using Eveready Alkaline Batteries No. E95. Intermittent use will prolong the useful battery life.

To check battery condition
While operating the recorder, keep the BATT CHECK/LIGHT button depressed and observe the pointer of the left VU meter. If the pointer of the meter stays out of the green zone, replace all the batteries with fresh new ones.
● Before critical recordings, checking the batteries in recording mode is recommended.



HOUSE CURRENT
Use the appropriate ac power adaptor listed below, available in the countries where the unit is used. First adjust the dc output voltage of the adaptor to 6 V, and connect the adaptor to the recorder DC IN 6 V jack, and then to a wall outlet.

where used	AC Power Adaptor	Input voltage of adaptor
USA	AC-12 (available only in Japan)	117 V ac, 60 Hz
Canada	AC-12 (available only in USA)	120 V ac, 60 Hz
Japan	AC-12 (available only in Canada)	100 V ac, 50/60 Hz
European countries	AC-122	110, 127, 220 or 240 V ac adjustable, 50 Hz
other countries	AC-122	110, 120, 220 or 240 V ac adjustable, 50/60 Hz

● Before connecting, be sure to read the instruction manual for the adaptor.
● When the ac power adaptor is connected to the recorder DC IN 6 V jack, the internal batteries (if present) are automatically disconnected.

12 V CAR BATTERY
Use the Sony Car Battery Cord DCC-127A or DCC-130 (optional), and connect the recorder DC IN 6 V jack to the cigarette lighter socket of a car. For further details, refer to the instruction manual of the car battery cord.
● Before connecting, be sure to set the output voltage of the car battery cord to 6 V.
● When the car battery cord is connected to the DC IN 6 V jack, the internal batteries (if present) are automatically disconnected.

CONNECTIONS

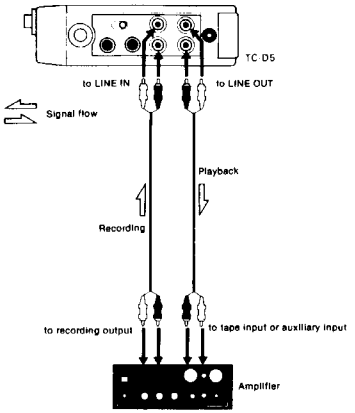
Notes on connection

- When recording from the LINE IN jacks, remove any connections from the MICROPHONE jacks.
- When interconnecting electronic equipment with the TC-D5, there are certain conditions that should be observed. In general, the output impedance of a signal source should be much lower than the input impedance of the device to be connected to the signal source. The output level of a signal source should be equal to or slightly higher than the rated sensitivity of the other device. These specifications, both for Sony and other makes of equipment may be found in the instruction manual of the particular piece of equipment.
- Turn off the recorder, amplifier, and other connected devices before making connections.
- Insert the cable connectors fully into the jacks.

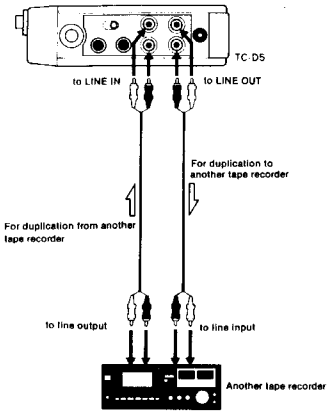
Loose connections may cause hum and noise.

- The red plug of the connecting cord should be connected to the right channel and the other plug to the left channel.

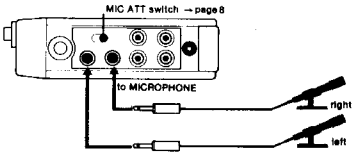
Amplifier connection



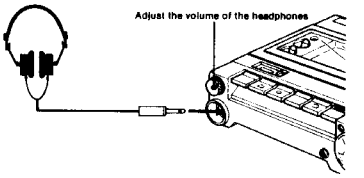
Tape duplication connection



Microphone connection

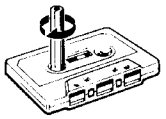


Headphone connection

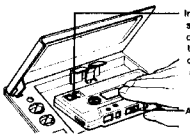


CASSETTE INSERTION

Before inserting a cassette, take up any slack in the tape by inserting a thick pencil into the hub of the cassette and turning it a few times.



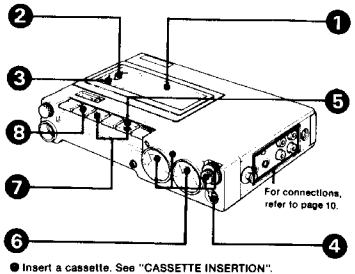
● Open the Cassette Compartment Lid by lifting the notches on the left side.
● Place a cassette in the compartment as illustrated.



● Close the lid.
● To take out the cassette, open the Cassette Compartment Lid and depress the EJECT button.

RECORDING

● The numbers in the illustration refer to the sequence of operations.



● Insert a cassette. See "CASSETTE INSERTION".
● Set the TAPE SELECT switch to the proper position according to the type of tape to be used. Refer to the table on next page.
● Select the position of the DOLBY NR switch.
ON: for recording with the Dolby NR process.
OFF: for recording without the Dolby NR process.
● Set the LIMITER switch to OFF.
● When recording programs containing high level bursts, set this switch to ON after the recording level adjustment is made.
● For indexing the tape contents, set the Tape Counter to 000 by pushing the Reset Button.
● Depress the RECORD button.
● Set the recording level referring to the "Recording level adjustment".
● While depressing the RECORD button, depress the FWD button. Lock the two buttons in place. Recording will begin.
● The sound to be recorded can be heard through the headphones at any desired volume using the MONITOR LEVEL control without affecting the recording level.
● When the recording is finished, depress the STOP button.
● At end-of-tape, the tape motion stops and the locked buttons are released automatically.
● If the recording is not completed by the end of one side, take out the cassette, turn the cassette over and repeat the recording procedures.
● To hear the just recorded program, press the REW button to rewind the tape, stop it with the STOP button and depress the FWD button.

Recording level adjustment
High recording level is recommended to reduce annoyance of tape noise, but overloaded and distorted tapes could result if the level is too high. Generally, recording level should be adjusted so that the pointers of the meters deflect as close as possible to 0 at the highest signal-level passage of the program you want to record. The pointers may go over 0 for an instant at sudden high level bursts, but usually this is not a problem. Such bursts can be detected by the flashes of the PEAK level indicator. Try to keep the overall level at a value causing minimum triggering or flashing of the PEAK level indicator. This indicator follows the transient peaks of occasional high level inputs that cannot be followed by VU meters.

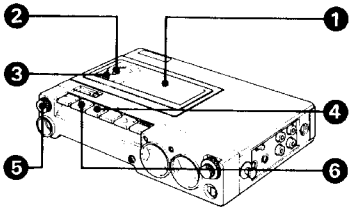
Proper setting | Setting too high (distorted tape) | Setting too low (noisy tape)

Recommendations for the TAPE SELECT switch
The following list shows our recommended settings, which have been determined through critical listening tests and electrical characteristic measurements, on commercially available cassettes. These settings may be changed to adhere to your personal preference.
For Sony cassettes, be sure to use the recommended settings to obtain the optimum tape characteristics.

Cassette tapes	position of the TAPE SELECT switch
Sony (low-noise, HF) AGFA (LH, Super HD) BASF (LN, LH, LH super) SCOTCH (LH, LD) TDK (D, SD, AD) MAXELL (LN, UD, UD-XL) other standard cassettes	NORMAL
Sony (Ferri-Chrome) SCOTCH (CLASSIC) BASF (ferrochrom)	Fe-Cr
Sony (CR) TDK (SA) Other chromium Dioxide Cassettes	Any (Automatic detection)

PLAYBACK

● The numbers in the illustration refer to the sequence of operations.



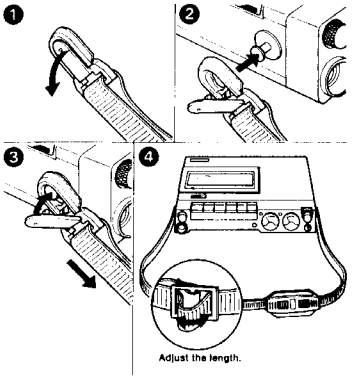
❶ Insert a cassette. See "CASSETTE INSERTION" on page 12.
❷ Set the TAPE SELECT switch to the proper position according to the type of tape to be used. Refer to the table on page 13.
❸ For playback of a Dolby NR processed tape, set the DOLBY NR switch to ON. For playback of non-Dolby NR processed tape, set it to OFF.
❹ Depress and lock the FWD button. Playback will begin.
● During playback, the pointers of the meters swing according to the recorded level.
● For headphones listening, plug them into the HEADPHONES jack.
❺ For listening with the built-in speaker or headphones, adjust the volume with the MONITOR LEVEL control.
● When the unit is connected to an amplifier, turn the MONITOR LEVEL control completely counterclockwise and adjust the volume and tone controls of the amplifier.
❻ To stop the tape, depress the STOP button.
● At end-of-tape, the tape motion stops and the locked button is released automatically.

Automatic Shut-off Mechanism
In record or playback mode, tape motion stops at end-of-tape and the locked buttons will return to its original position automatically.
In fast forward or rewind mode, the locked button will not be released at end-of-tape, but the motor will stop automatically to avoid excessive battery wear.
Note: Be sure to depress the STOP button after the motor stops at end-of-tape in fast forward or rewind mode.

ERASING WITHOUT RECORDING

A cassette can be erased without adding a new recording as follows.
❶ Insert the cassette with the side to be erased up.
If the tab on the cassette has been removed, cover the slot.
● Make sure that nothing is connected to the LINE IN and MICROPHONE jacks.
❷ Turn the REC LEVEL controls fully counterclockwise.
❸ While depressing the RECORD button, depress the FWD button. Lock the two buttons in place. Erasing will begin.
❹ When erasure is completed, depress the STOP button.

ATTACHING THE SHOULDER STRAP



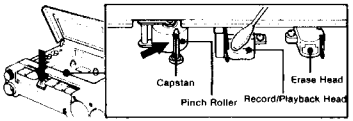
MAINTENANCE

Cleaning the heads

Keeping the tape heads in a clean condition is essential to the proper operation of the recorder. Accumulations of dust and tape oxides on the heads will result in sound drop-outs, a loss of high frequencies and excessive tape wear. Generally, cleaning after every 10 hours of operation will be sufficient. However, all surfaces over which the tape travels should be cleaned before making high quality recordings.

To clean the heads:

- Open the Cassette Compartment Lid. Remove the cassette, if present.
- Depress the FWD button to move the heads out for easier access.
- Moisten the Head Cleaning Tip (supplied) or a soft cloth with a denatured alcohol, and gently wipe the heads, Capstan and Pinch Roller over which the tape travels.



- To avoid catching the cotton between the Pinch Roller and Capstan, insert the tip from the side shown and depress the PAUSE button when wiping the Capstan.
- Depress the STOP button to release the FWD button.
- Do not insert a cassette if the heads are protruding; first press the STOP button.
- Do not insert a cassette before the alcohol has dried completely.

Demagnetizing the heads

Either prolonged use, or an accidental contact with a piece of magnetized steel (screwdriver, scissors, etc.) will magnetize the heads causing an increase in tape noise. The heads and metallic parts of the tape path should be demagnetized after 20–30 hours of operation using a commercially available head demagnetizer.

- When demagnetizing, remove the batteries and disconnect the ac power adaptor.
- The Sony Head Demagnetizer HE-3 is recommended.

Cleaning the cabinet

Clean the cabinet with a soft cloth slightly moistened with water or a mild detergent solution. Do not use solvents such as alcohol, benzine, or thinner as they may mar the finish of the cabinet.

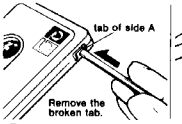
Inside check

Consult your nearest Sony service facility to maintain optimum performance.

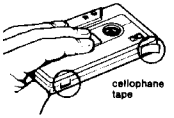
NOTES ON CASSETTES

To protect recording from accidental erasure

Remove the tab as illustrated so that the RECORD button cannot be depressed. To record on a cassette whose tabs have been removed, simply cover the slot with cellophane or vinyl tape.



To protect side A recording



Do not stick any other material except on the circled portions.

Note: Be careful not to cover the detector slots of the chromium dioxide cassette.

Cassette care

- Before inserting a cassette, take up the slack of the tape to prevent it from becoming entangled around the capstan.
- Avoid touching the tape surface of a cassette, as any dirt or dust may cause contamination of the heads.
- Protect cassettes from dust by storing them in their cases. Even minor dirt or dust could cause contamination of the heads resulting in noise and sound drop-outs.
- Keep cassettes away from magnetic equipment such as speakers, amplifier, etc., as erasure or distortion on your recorded tape could occur.
- Do not expose a cassette to direct sunlight, extremely cold temperature or moisture.
- Avoid fast-winding just before storing a cassette tape, as this may cause stretching of the tape edge if it is left over a period of time.
- Do not stick thick paper or tape to the cassette, as this may affect proper cassette alignment and disturb good tape contact with the head.

What cassette to use

This unit is preadjusted at the factory using Sony Ferri-Chrome Cassette, Sony Chromium Dioxide Cassette and Sony HF Cassette. All commercially available cassettes perform well with this unit, but for optimum recording and playback results, we recommend Sony cassettes.

SPECIFICATIONS

Semiconductors	9 IC, 66 transistors, 19 diodes, 1 FET, 2 LED
Recording system	4-track 2-channel stereo
Fast winding time	Approx. 150 sec. with Sony Cassette C-60
Frequency response	DOLBY NR OFF with MICROPHONE inputs
	• With Ferri-Chrome Cassette
	(TAPE SELECT: Fe-Cr)
	20–18,000 Hz (NAB)
	30–16,000 Hz ±3 dB (NAB)
	30–16,000 Hz (DIN)
	• With Chromium Dioxide Cassette
	20–16,000 Hz (NAB)
	30–15,000 Hz ±3 dB (NAB)
	30–15,000 Hz (DIN)
	• With standard cassette
	(TAPE SELECT: NORMAL)
	20–15,000 Hz (NAB)
	30–12,000 Hz (DIN)
S/N ratio	DOLBY NR OFF
	• With Ferri-Chrome Cassette
	(TAPE SELECT: Fe-Cr)
	59 dB at peak level (NAB)
	57 dB (DIN, 1975 rev.)
	• With Chromium Dioxide Cassette
	55 dB at peak level (NAB)
	• With standard cassette
	(TAPE SELECT: NORMAL)
	53 dB at peak level (NAB)
	DOLBY NR ON
	Improved by 5 dB at 1 kHz, 10 dB above 5 kHz
Total harmonic distortion	1.3%
Wow and flutter	0.06% (WRMS)
	±0.17% (DIN)
Bias Frequency	85 kHz
Speaker	Approx. 5 cm (2 inches) dia.
Power output	200 mW (at 10% harmonic distortion) at dc operation
Inputs	Two microphone input jacks (phone jack) sensitivity 0.2 mV (–72 dB) for low impedance microphone
	Two line input jacks (phono jack) sensitivity 0.06 V (–22 dB) input impedance 47 kilohms
Outputs	Two line output jacks (phono jack) load impedance 10 kilohms or higher rated output 0.435 V (–5 dB) at load impedance 47 kilohms
	Headphones jack (stereo binaural jack) for 8–32 ohm impedance headphones
Power requirements	3 V dc, two batteries IEC designation R20 (size D)
	External Power Input Jack required voltage: 6 V dc usable from 100 V ac with optional AC Power Adaptor AC-12 available in Japan, 117 V ac with optional AC Power Adaptor AC-12 available USA, or 120 V ac with optional AC Power Adaptor AC-12 available in Canada, from 110, 120, 127, 220, or 240 V ac with optional AC-122 (refer to page 9), or from 12 V car battery with optional Sony Car Battery Cord DCC-127A or DCC-130
Battery life	Approx. 2 hours of continuous recording with Sony Super Batteries SUM-1S or 5.5 hours with Eveready Alkaline Batteries No. E95
Dimensions	Approx. 237 × 48 × 168 mm (w/h/d) ($9^3/_8 \times 1^7/_8 \times 6^5/_8$ inches) incl. projecting parts and controls
Weight	Approx. 1.7 kg (3 lb 12 oz) incl. batteries
Accessories supplied	Connecting Cord RK-74H (2)
	Shoulder Strap (1 set)
	Head Cleaning Tips (1 set)

While the information given is true at the time of printing, small production changes in the course of our company's policy of improvement through research, and design might not necessarily be indicated in the specifications. We would ask you to check with your appointed Sony dealer if clarification on any point is required.

OPTIONAL ACCESSORIES

AC Power Adaptor AC-12, AC-122
Car Battery Cord DCC-127A, DCC-130
One Point Stereo Microphone ECM-99A, ECM-990F
Electret Condenser Microphone ECM-290F, ECM-260F, ECM-23F
Dynamic Microphone F-560, F-660, F-115A
Microphone Mixer MX-610, MX-510
Connecting Cord RK-112, RK-113 (two phono plugs to two phono plugs)
Stereo Headphones DR-7, DR-35, DR-45
Head Demagnetizer HE-3

Your dealer may not handle some of the above listed optional accessories. Please ask the dealer for detailed information about the optional accessories available in your country.

TROUBLESHOOTING GUIDE

Should any problem occur with the set, make the following simple tests to determine whether or not servicing is required.
If the problem persists after you have made these tests, consult the nearest Sony Service Station authorized to service tape recorders (in the USA), the nearest Sony of Canada Factory Service Station (in Canada) or the nearest Sony dealer (in other countries).

FUNCTION BUTTONS AND TAPE PATH

Cassette cannot be inserted.
- Cassette is being inserted improperly. See page 12.
- The FWD button is depressed.

The RECORD button cannot be depressed.
- No cassette in the Cassette Compartment.
- The cassette inserted has had the tabs removed. See page 17.
- The FWD, FF, or REW button has been depressed.

The FWD button cannot be locked.
- The tape is completely wound onto the right reel.

EJECT button cannot be depressed.
- The FWD button is depressed.

Tape does not move.
- The ac power adaptor is not connected (on ac operation).
- Battery operation is attempted while the ac power adaptor or car battery cord is connected to the recorder but not to the wall outlet or the cigarette lighter socket.
- Incorrect polarity of batteries.
- Weak batteries.
- The PAUSE button is locked.

Tape speed is too slow.
- Weak batteries.

Tape running noise is loud in rewind or fast forward mode.
- This situation depends upon the cassette used and is not a problem.

RECORDING AND PLAYBACK

No sound from the built-in speaker.
- The headphones are plugged in.
- The MONITOR LEVEL control is turned down completely.

No sound from the headphones.
- The MONITOR LEVEL control is turned down completely.

Weak or distorted sound.
- Weak batteries.

Sound drop-outs, loss of high frequencies, or excessive noise.
- Dirty heads. See page 16.
- Magnetized heads. See page 16.

Poor tone quality tape playback.
- Improper setting of the TAPE SELECT switch.
- Improper position of the DOLBY NR switch.

Recording or playback cannot be made or is unsatisfactory.
- Improper procedure or connection. See pages 10, 12 and 14.
- Improper recording level. See page 13.
- Improper setting of the amplifier controls.
- The MIC ATT switch is set to "20 dB".
- Recording from the LINE IN jacks cannot be made when microphones are connected.
- Weak batteries.
- Dirty Record/Playback Head. See page 16.
- Magnetized heads. See page 16.

Excessive wow and flutter.
- Contamination of the Capstan or Pinch Roller. See page 16.

Unsatisfactory erasing.
- Dirty Erase Head. See page 16.

HOWLING OR HUM NOISE

Howling occurs when trying to record from the amplifier.
- Amplifier input selector is set at AUX position while the unit is connected to amplifier AUX jacks. Change the amplifier input selector to the recording source position.

Howling occurs when trying to record from microphones.
- The microphone is too near the speaker. Keep the microphone away from the speaker or reduce the amplifier volume.

Hum noise.
- The recorder is stacked just on the amplifier or tuner.